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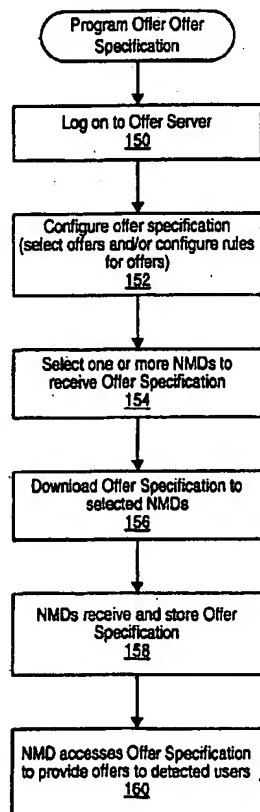
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(54) Title: SYSTEM AND METHOD FOR DISTRIBUTING OFFER SPECIFICATIONS IN A NETWORK SYSTEM



(57) Abstract: A system and method for providing offers for goods and/or services to users in an information network, such as the Internet. The system may comprise a network having a plurality of network management devices (NMDs) and access points (APs), wherein users connect to APs to access the network. APs for the network may be widely distributed in various facilities, such as airports, mass-transit stations, and businesses. Embodiments may comprise entering, storing, and distributing offer specifications to selected access points or other devices in the network. The offer specifications specify offers to be made and may specify rules for selecting or configuring offers. The offer specification thus may enable customization of various offers for products to mobile users in communications with the APs. A provider may access an offer server in the network and enter and/or edit offer specifications on the offer server. The provider may select one or more NMDs for receiving the offer specifications. The offer specifications may subsequently be downloaded to the one or more NMDs. A user may be a mobile user (MU) who may access the network through a portable computing device (PCD) using a wireless or wired method. When in sufficiently close range to an AP, the PCD may access an NMD through the AP. Demographic information and/or geographic location information of the MU may be gathered on the NMD, and the offer specifications may be applied to the information to provide customized information including offers for various products to the MU.

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TITLE: SYSTEM AND METHOD FOR DISTRIBUTING OFFER SPECIFICATIONS IN A NETWORK SYSTEM

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BACKGROUND OF THE INVENTION**1. Field of the Invention**

This invention relates generally to network communications and the selection and provision of offers, such as advertising, to users, and more specifically to the creation and distribution of offer specifications for offers for products (goods and services) to users in a network system.

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2. Description of the Relevant Art

Electronic commerce or Internet commerce has become an increasingly popular form of commerce in the United States and throughout the world. In general, electronic commerce or Internet-based commerce, often referred to as e-commerce, provides vendors and service providers the ability to greatly increase their sales channel and distribution network with minimal cost. An electronic commerce site provides a convenient and effective mechanism for potential customers to use, select and purchase products in an easy and simple fashion.

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The increasing use of mobile computing devices, which may be referred to as Portable Computing Devices (PCDs), along with the introduction of wireless technologies such as wireless Ethernet, IrDA, Bluetooth, and other wireless networking protocols, is presenting new opportunities for e-commerce. PCDs may include, but are not limited to, Personal Digital Assistants (PDAs), handheld computers, handheld PCs, and portable computers such as laptops and notebook computers, among others. A mobile user may access a network through a PCD using a wireless (or wired) network interface card. For example, when in sufficiently close range to an access point, the PCD may access the network through a wireless network card.

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In general, it would be desirable to provide a method for various facilities and businesses to provide information, including offers for products, e.g., goods and services, to mobile users through computing devices, such as the mobile users' PCDs. It may also be desirable to use demographic information and/or geographic location information of the mobile user to provide customized information, including targeted offers such as targeted advertising, for various products to the mobile user. It may also be desirable to provide a method for entering, storing, and distributing to selected access points, or to other devices in the network, offer specifications that enable the customization of the various offers for products to mobile users in communication with the access points.

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SUMMARY OF THE INVENTION

Embodiments of the present invention may comprise an improved system and method for providing offers for products, e.g., advertisements of goods and/or services, to users, including mobile users, in an information network. Embodiments of the present invention may also comprise an improved system and method for entering, storing, and distributing to selected network management devices (NMDs) or access points, or to other devices in the network, offer specifications that enable the customization of the various offers of products to mobile users in communications with the access points. Embodiments of the present invention may also comprise an improved

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system and method for gathering and using demographic information and/or geographic location information about the mobile user to provide targeted or customized information, including targeted offers for various products to the mobile user.

The system may comprise a plurality of distributed network management devices (NMDs) operable to be coupled to the network, and a plurality of access points coupled to the NMDs. The network may be a wide area network (WAN), such as the Internet, and may be a wired network, a wireless network, or a combination. The access points (APs) for the network may be widely distributed in various facilities, such as airports, mass-transit stations, hotels and various businesses, such as malls, restaurants, stores and law offices. The system may further comprise one or more offer servers operable to be coupled to the network, and one or more providers, such as information providers and service providers, operable to be coupled to the network.

Users operating computing devices may couple to or access the network through the access points. The user may be a mobile user (MU) who accesses the network through a portable computing device (PCD) using a wireless (or wired) network interface card. When in sufficiently close range to an access point, the PCD may access the network through the network card. In one embodiment, the APs are arranged at known geographic locations and may provide geographic location information regarding the geographic location of the mobile user (MU). A digital certificate may be stored on the mobile user's PCD. When accessing the network, the digital certificate may be selectively provided by the user to selectively enable access by providers to the user's demographic information stored on the network, or other information.

The offer server may be used for configuring and storing offer specifications which describe or specify offers or inducements provided by the NMDs and/or access points to users. The offer specification may include one or more offers of products, e.g., the offer specification may include the actual offers or may specify the offers in some way, such as by identifying the offers located on a separate server. For example, the offer specification may include a subset of offers from a plurality of possible offers. The offer specification may further include one or more rules for providing offers of products to users, wherein the rules for providing offers may be based on information of the detected user or other criteria. For example, the rules for providing offers may be based on demographic information of the users and/or geographic location information of the users.

A provider using a client system may access an offer server on the network and create, configure and/or edit offer specifications on the offer server, such as by using a web browser. The provider preferably configures an offer specification and selects NMDs (or access points) using a graphical user interface (GUI) on the offer server. For example, the provider may select a subset of offers from a plurality of possible offers. The provider may also specify a subset of NMDs of a plurality of possible NMDs (or a subset of access points) to receive the offer specification. For example, the NMDs may be located at various different providers, such as in airports, hotels of various hotel chains, mass transit stations, office buildings, etc. A certain provider may configure a desired offer specification and then select a subset of the NMDs that are located in that provider's facilities, e.g., may select the NMDs only in the respective provider's hotels. Various providers may thus configure and reconfigure different offer specifications to be transmitted to different subsets of NMDs. This allows a provider to easily specify and change the type and kind of offers being provided to users, the locations from which these offers are to be provided, and the rules governing how or when these offers are provided, on an as-desired basis.

The configured offer specification may subsequently be downloaded to the selected subset of NMDs (or access points). Once an offer specification has been downloaded to an NMD, the NMD may provide offers to users according to the offer specification. For example, when a user computing device of a user connects to a first NMD of the subset of NMDs, e.g., connects to an access point coupled to the first NMD, the first NMD may provide various offers to the user according to the offer specification. Alternatively, the first NMD may select and provide at least one of the one or more offers of products to the user computing device according to the offer specification, e.g., according to the rules in the offer specification. In various embodiments, the NMD may itself be an access point which communicates with a user computing device, or the NMD may couple to one or more access points and provide the offers through an access point to which a user computing device is communicating.

The NMD may also use the rules comprised in the offer specification in selecting and providing offers to users that are detected by that NMD (or by access points connected to that NMD), e.g., based on information of the user. Thus the NMD may select different offers and/or provide different modifications of an offer based on information of the user, such as the user's demographic information or the user's geographic location. Thus, an NMD may provide different offers to different users based on the rules in the offer specification and the information of the particular user. For example, a first NMD may determine a first offer to be provided to a first user computing system of a first user in accordance with the rules in the offer specification, and the first NMD may determine a second offer to be provided to a second user computing system of a second user in accordance with the rules in the offer specification.

In one embodiment, the computing device of the user provides identification information to the NMD, and the NMD uses the identification information in determining the information of the user. The identification information may be contained in a digital certificate associated with the user, and the NMD may validate the user using the identification information or digital certificate. The NMD may use the identification information to access demographic information of the user, such as from a separate server. Alternatively, the demographic information may be contained in the digital certificate provided by the user.

Thus, various embodiments of the present invention allow a provider or client to easily configure various offer specifications that describe the type and kind of offers that are to be provided to users, possibly including various rules used in selecting or configuring offers. The rules in the offers specification may be based on user demographics, geographic location, or other factors. The system also allows a user to select various NMDs or access points to receive the offer specification, thus selecting the NMDs or access points desired to provide the offers based on the offer specification. This allows a provider to easily configure and manage offers being made to users in a network system, allowing the provider to easily change the offers being made on a daily, weekly, or monthly basis, as desired. This also allows a provider to easily configure offer rules in the offer specification to enable the offers to be intelligently made based on user demographics and user geographic location, and other criteria.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the accompanying drawings in which:

Figure 1 is a block diagram of one embodiment of a network system including an offer server, a service provider, network management devices (NMDs) and access points (APs);

Figure 2A is a block diagram illustrating one embodiment of the network system, wherein a user device uses a wireless network connection to communicate with an AP;

Figure 2B is a block diagram illustrating one embodiment of the network system, wherein a user device uses a wired network connection to communicate with an AP;

Figure 2C is a block diagram illustrating one embodiment of the network system, wherein the NMD performs the function of the AP;

Figure 3 is a flowchart illustrating one embodiment of a method for distributing rules for offers of products to various devices in a network;

Figure 4 is a flowchart illustrating one embodiment of a method for providing offers for products to users according to an offer specification; and

Figure 5 is a flowchart illustrating one embodiment of a method for providing customized offers for products to mobile users in a mobile network environment.

While the invention is susceptible to various modifications and alternative forms, specific embodiments thereof are shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that the drawings and detailed description thereto are not intended to limit the invention to the particular form disclosed, but on the contrary, the intention is to cover all modifications, equivalents and alternatives falling within the spirit and scope of the present invention as defined by the appended claims.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Incorporation by Reference

U.S. Patent No. 5,835,061, titled "Method and Apparatus for Geographic-Based Communications Service", whose inventor is Brett B. Stewart, is hereby incorporated by reference in its entirety as though fully and completely set forth herein.

U.S. Patent Application Serial No. 09/433,817 titled "Geographic Based Communications Service" and filed on November 3, 1999, whose inventors are Brett B. Stewart and James Thompson, is hereby incorporated by reference in its entirety as though fully and completely set forth herein.

U.S. Patent Application Serial No. 09/433,818 titled "A Network Communications Service with an Improved Subscriber Model Using Digital Certificates" and filed on November 3, 1999, whose inventors are Brett B. Stewart and James Thompson, is hereby incorporated by reference in its entirety as though fully and completely set forth herein.

U.S. Patent Application Serial No. 09/551,309 titled "System and Method for Managing User Demographic Information Using Digital Certificates" and filed on April 18, 2000, whose inventor is James W. Thompson, is hereby incorporated by reference in its entirety as though fully and completely set forth herein.

Figure 1 – Exemplary Network Communication System

Figure 1 is a block diagram of one embodiment of a network system, also referred to as a communication service system. The network system may be similar to the system described in U.S. Patent No. 5,835,061. The network system may be used for general information access, electronic communication, various electronic services, and/or electronic commerce (e-commerce) or Internet commerce.

The network system may include at least one offer server computer system (offer server) 102, at least one provider or client computer system 104, a plurality of network management devices (NMDs) 106 and a plurality of access points (APs) 108. The offer server 102, the provider system 104 and the plurality of NMDs 106 are each coupled to network 100, and the access points 108 are preferably coupled to respective NMDs 106, as shown. The NMDs 106 and the APs 108 are preferably distributed in various locations for access by users, such as in airports, mass-transit stations, hotels and various businesses, such as shopping malls, restaurants, stores and law offices.

The exemplary embodiment illustrated in Figure 1 includes one offer server 102, one provider system 104 and three NMDs 106 each attached to one or more APs 108, although the system can scale to any size and preferably encompasses a large number of offer servers 102, providers 104, NMDs 106, and APs 108. Thus, it is noted that various embodiments may be utilized with respect to any number of offer servers 102, providers 104, NMDs 106 and APs 108.

Offer server 102, provider system 104 and NMDs 106 each may be coupled to a network 100 such as the Internet. The Internet is currently the primary mechanism for performing electronic commerce and information interchange. However, the network 100 may be any of various types of wide-area networks, local area networks, or networks of networks, such as the Internet, which connects computers and networks of computers together. Thus, the network 100 may be any of various types of networks, including wired and wireless networks, or combinations thereof. The network 100 may include or be coupled to other types of communications networks, (e.g., other than the Internet) such as the public switched telephone network (PSTN), among others.

As shown in Figure 1, the provider system 104 may offer one or more of information, content, services or products (collectively referred to as products) to users over network 100, such as the Internet, through one or more APs 108 connected to NMDs 106. As used herein, the term "product" is intended to comprise or include goods, services, information, content and other types of products that may be provided to or offered to a user. For example, the provider system 104 may offer advertising content, such as targeted advertising, to users over the network 100. The provider system 104 may also be a vendor who offers goods and/or services for sale over network 100, such as the Internet. The provider system 104 may also offer any of various types of services over the network 100, wherein services offered may include any of various types of information or content, as well as services such as financial services, insurance services, rental car services, etc. The provider system 104 may further (or instead) simply operate as a client system in configuring an offer specification on the offer server 102 that specifies the offers desired to be offered by the provider.

As shown, the offer server 102 may also be connected to the network 100. The offer server 102 may store and execute offer specification configuration software for configuring offer specifications. The offer server 102 may be maintained by the provider system 104, or alternatively by a third party. The offer server 102 may receive, store, create, configure, and/or distribute offer specifications for providing offers for products to mobile users in communications with the various APs 108 in the network system. In one embodiment, the offer specifications may

be stored in a database, and the offer specifications may be entered or configured using a database programming language. In one embodiment, the offer specifications may be in the SQL database programming language. In another embodiment, the offer specifications may be in a data representation language such as Hypertext Markup Language (HTML) or eXtensible Markup Language (XML). Other computer-executable methods and languages
5 may also be used for entering and/or storing the offer specifications.

As shown, one or more NMDs 106 may also be connected to the network 100. Each NMD 106 may be connected to one or more APs 108. The NMDs 106 and APs 108 may be widely distributed in various public and/or private facilities, such as airports, mass-transit stations, malls, schools, hotels and in various other businesses, such as shops, restaurants, etc. In one embodiment, a user, also referred to as a subscriber, may access
10 an AP 108 through a user computing device, for example, a portable computing device (PCD), using a wireless (or wired) network interface card.

In one embodiment, as shown in Figure 2C, an NMD 106 may incorporate the AP 108 hardware and/or software in the NMD 106 device, i.e., the NMD may also implement the access point. In this embodiment, mobile users may connect directly to an NMD 106. In the preferred embodiment, the NMD 106 is separate from the access
15 points 108.

The NMDs 106 may each include a processor and memory medium. The memory medium may store an offer engine (not shown) that is executable for applying the offer specification received from offer server 102 to select and/or provide offers to users who connect to an AP 108 coupled to the NMD 106. Thus each of the NMDs 106 may store and execute the offer engine software to provide offers according to the offer specification. The
20 offer engine may use information regarding the user, such as demographic information and/or geographic location information about users in communications with APs 108. The NMDs 106 may thus receive, store and apply the offer specification or a subset of the offer specification for providing offers of products to users.

In one embodiment, the provider system 104, i.e., a user of the provider computer system (client system) 104, may connect to offer server 102, create and/or modify an offer specification, and select one or more NMDs
25 106 and/or one or more APs 108 to receive the newly created and/or modified offer specifications. The offer server 102 may then connect to the selected one or more NMDs 106 and download the new and/or modified rules to the selected NMDs 106. In one embodiment, an NMD 106 may access the offer server 102, locate new and/or modified offer specifications to be downloaded, and then may download the located rules from the offer server 102. In Figure 1, NMDs 106b and 106c and associated APs 108b1, 108b2 and 108c1 and 108c2 illustrates a group 114
30 of NMDs 106 and APs 108 that may be selected by provider system 104 to receive an offer specification created or modified on offer server 102.

User Device 112

A user computing device 112 may be any of various types of devices, including a computer system, such as desktop computer (e.g. a non-portable computer), or a portable computing device (PCD). A portable computing
35 device (PCD) may include a portable computer system, such as a laptop computer, notebook computer, etc., a personal digital assistant (PDA), an Internet appliance, a communications device such as a cellular phone, digital wireless telephone, or other wired or wireless device. The device 112 may include various wireless and/or wired communication devices, such as a wireless Ethernet card, cellular telephone logic, paging logic, RF communication

logic, a wired Ethernet card, a modem, a DSL device, an ISDN device, an ATM device, a parallel or serial port interface, or other type of communication device; or other device, bus or port that may be used to support a communications device, such as a USB port connected to a USB modem or IEEE 1394 (FireWire) connection to a wired or wireless communication device.

5 The computing device 112 may include a memory medium that may store a digital certificate. The digital certificate may also be referred to as a personal certificate. In one embodiment, the digital certificate may be stored in a web browser on the device 112. The digital certificate may comprise identification information of the user. The digital certificate may also comprise a reference or cookie to the user's demographic information, which may be kept on a separate server coupled to network 100. The references or cookies may take the form of a URL, a
10 pointer, an IP address, or other reference or cookie.

 The digital certificate stored on the device 112 may include access information for rendering the respective user's demographic information useable, accessible, or intelligible. The access information may be stored in extensions within the digital certificate, such as non-critical extensions. The access information may take any of various forms. Where the demographic information is stored in an encrypted format, the access information may
15 comprise a "key" or other data for decrypting the information. In general, the access information may comprise some type of data that may operate to effectively "unlock" the demographic information or make the demographic information useable or accessible in some way.

 The digital certificate may also store other information. In one embodiment, the digital certificate may store at least a portion of the user's demographic information, such as charging history of the user, or membership
20 information of the user. This demographic information or other information may be stored in extensions within the digital certificate, such as non-critical extensions of the digital certificate. In one embodiment, the NMD 106 may use at least a portion of the information stored in the digital certificate in determining an offer to provide to the user. In one embodiment, the device 112 may supply the digital certificate with demographic information to the NMD 106, and the NMD 106 may then access this demographic information from the digital certificate rather than
25 retrieving this demographic information from a server. In one embodiment, the device 112 may provide at least a portion of the demographic information of the user to the NMD 106 separate from the providing of the digital certificate.

 A user device 112 may connect to an AP 108 when in sufficiently close range to the AP 108. In one embodiment, user computing device 112 may establish a wireless connection with the AP 108 through a wireless
30 network card. Alternatively, the user device 112 may be physically connected to the AP 108 with a wired connection. In one embodiment, the APs 108 may be arranged at known geographic locations and may provide to NMDs 106 geographic location information regarding the user device 112. In another embodiment, a user device 112 may include location hardware and/or software such as a Global Positioning System (GPS), and may provide geographic location information to an NMD 106 through the AP 108.

35 As described above, in one embodiment a digital certificate may be stored on the user computing device 112, and may be selectively provided by the user to selectively enable an NMD 106 to access the user's demographic information stored elsewhere on the network. Alternatively, the digital certificate itself may include demographic information of the user.

As used herein, the term "demographic information" includes one or more of identity information, contact information, profile information, membership / sponsorship information, past transaction information, purchasing habits, credit card usage, preferences such as restaurant or hotel preferences or rental car preferences, past activities, and past commercial activities, among other types of customer or user data. The term "profile information" includes one or more of age, weight, income level, residence location, and travel history, among other types of information. The term "membership information" or "sponsorship information" includes one or more of information regarding memberships of the user, information regarding incentive programs in which the user is a member, and information regarding entities in which the user is affiliated, among others. Thus, membership information may include information regarding frequent flier program memberships (e.g., the American Airlines Advantage Program), rental car incentive programs (e.g., Hertz Number One Club Gold), bank affiliations, country club affiliations, and other programs or affiliations, such as other incentive programs, preferred status memberships, other programs sponsored by product vendors, and other organizations of which the user is affiliated. The demographic information thus may take any of various forms.

In one embodiment, upon receiving the geographic information and/or demographic information of a user, an NMD 106 may then extract a portion or all of the geographic information and/or demographic information of the user, the NMD 106 may apply the information to the offer specification, and as a result the NMD 106 may generate one or more offers for products based upon the user's geographic and/or demographic information as applied to the offer specification, e.g., the rules in the offer specification. The offers for products may then be sent to the user computing device 112 through the wireless or wired connection to the AP 108.

The following examples are provided of using the network system as illustrated in Figure 1, and are not intended to be limiting in any way.

User computing device, also referred to as a computing device or user device, 112 may connect to the network 100 through AP 108c1 and NMD 106c. The user device 112 may connect to AP 108c1 through a wireless connection when user device 112 is moved into proximity of AP 108c1. In one embodiment, AP 108c1 may detect user device 112 when in proximity and may establish a wireless connection. Alternatively, a user of user device 112 may establish a physical connection to AP 108c1, for example, by plugging user device 112 into a network port supplied by AP 108c1.

The user computing device 112 may be of various kinds of systems such as a computer system, including a non-portable computer system such as a desktop computer system, or a portable computing device (PCD). A PCD may include, but is not limited to, portable computers such as laptops and notebook computers, a network appliance, an Internet appliance, a Personal Digital Assistant (PDA), WebTV device, a portable or cellular telephone, two way pager, phone, handheld computers, etc. In one embodiment, the user device 112 may execute web browser software for allowing a user of the user device 112 to browse and/or search the network 100, as well as enabling the user to conduct transactions or commerce and/or receive information or content over the network 100. User device 112 may optionally utilize an encryption technology, for example, a 64-bit or 128-bit encryption technology, to securely communicate on the network.

In one embodiment, the user device 112 may store a digital certificate that may be used in managing or controlling access to a first user's demographic information comprised in the network. In one embodiment, the user's demographic information may be stored in a database on a server in the network, and access to the

demographic information on the server may be controlled by the use of digital certificates. In one embodiment, the digital certificate stored on the user device 112 of the first user may include access information for enabling access to or use of the first demographic information of the user by an NMD, e.g., in providing information or content to the first user. The digital certificate may also include an identity of the first user, as well as other information. For example, the digital certificate may comprise a portion of the user's demographic information, such as membership information, or may comprise charging and network usage information. In this embodiment, access charges for access to the network may be computed based on information, such as charging information and/or membership information, comprised in the user's digital certificate. As used herein, the term "digital certificate" is intended to encompass any of various types of data structures that may be used for gaining access to network resources.

The user device 112 may be operable to present its digital certificate to the NMD 106c, wherein the user's provision of the digital certificate may enable one or more uses of the demographic information of the first user comprised in a database on a server on the network 100. For example, the first user's provision of the digital certificate may enable provider system 104 to provide targeted content or information, e.g., advertising or inducements, to the computing device 112 of the first user by application of the first user's demographic information to a set of rules in an offer specification on NMD 106c. The user's provision of his/her digital certificate may also or instead operate to associate the first user with the corresponding demographic information and/or render the demographic information intelligible, e.g., decrypted.

Thus, in one embodiment, the demographic information of a user is not associable to the user without a digital certificate, and the respective user's digital certificate comprises access information for associating the user with his/her demographic information. Thus, the user's provision of his/her digital certificate may also or instead operate to associate the user with corresponding demographic information.

In another embodiment, the demographic information of a user comprised in a database on a server is unintelligible, e.g., is encrypted, and the digital certificate of the respective user contains the "key" necessary to decrypt the demographic information. Thus, presentation of the respective user's digital certificate may render the user's demographic information intelligible or unencrypted. For example, the demographic information of a user comprised in the database may be encrypted using a first key, and the digital certificate of the respective user may include a second key, wherein the second key from the user's digital certificate is used to decrypt the user's demographic information.

The computing device 112 may present the digital certificate directly to the NMD 106c, which may then present the digital certificate to a database server on network 100 comprising the demographic information of the user. As noted above, presentation of the digital certificate to the database server may enable use of or access to the demographic information of the user comprised in the database server.

As noted above, a user's digital certificate may comprise access information for enabling use of or access to the user's demographic information, and provision of the digital certificate enables use of or access to the demographic information of the user comprised in the database. In one embodiment, the user may receive some type of financial benefit in return for provision of the digital certificate.

In one embodiment, the user device 112 may provide demographic information of the user directly to the NMD 106c. In one embodiment, a digital certificate associated with the user may include demographic information

of the user that may be applied to a set of rules on NMD 106c and thus to provide one or more offers for products to the user.

The NMD 106c may take various actions in response to gaining access to the user's demographic information. For example, the NMD 106c may provide information or content to the user based on the demographic information. In one embodiment, the NMD 106c may use the demographic information to select or generate targeted advertising, inducements, offers, etc. to the user by applying the demographic information to the offer specification stored on the NMD 106c, e.g., by applying the demographic information to rules contained in the offer specification. The offer specification may have been previously entered by provider system 104 on offer server 102 and selectively provided to a group of NMDs 106 including NMD 106c by offer server 102 as designated by provider system 104.

In one embodiment, physical location information, which also may be herein referred to as geographic location information, may be provided to NMD 106c, and the geographic location information may be applied to the rules in the offer specification to thus provide one or more offers for products to the user. In one embodiment, AP 108c1 may be at a known physical location, and the rules comprised in the offer specification on NMD 106c may include rules that distinguish the physical location of AP 108c1 and AP 108c2. Thus, when user device 112 is in proximity connection with AP 108c1, a first set of offers may be provided to the user of user device 112. If user device 112 is subsequently moved into proximity connection with AP 108c2, a second set of offers may be provided to the user of user device 112 based upon the geographic location of AP 108c2. In one embodiment, as noted above, user device 112 may provide geographic location information about user device 112 to AP 108c1 and thus to NMD 106c. For example, user device 112 may include a GPS that may be used to provide location information to the NMD 106c. In one embodiment, NMD 106c may compare the geographic location information to known location information in determining offers to provide to the user of user device 112. For example, the NMD 106c may determine from the location information that the user is within business A, or within a certain distance of business A, and may thus provide one or more offers for products that may be provided by business A. At the same time, NMD 106c may, for example, include offers from business B, and the rules may specify that, if the user is proximate to business A, provide special offers as inducements to try to entice the user to go to business B.

In one embodiment, both demographic and geographic information may be provided to the NMD 106 for application to the rules in the offer specification. For example, in an airport, if a user with a user device 112 is near car rental agency A, an NMD 106 may analyze the user's location and demographic information as applied to rules contained in an offer specification provided by car rental agency B and determine that, according to the offer specification, car rental agency B desires to offer this user a discount off daily rates, frequent flyer miles, or other special offer to try to induce the user to switch from agency A to agency B.

The provider system 104, the offer server 102, the user device 112, the NMDs 106, and the APs 108 may each include various standard components such as one or more processors or central processing units, one or more memory media, and other standard components, e.g., a display device, input devices, a power supply or batteries, etc. The offer server 102 and the provider system 104 may also each be implemented as two or more different computer systems.

One or more of the provider system 104, the offer server 102, the NMDs 106, the APs 108, and/or the user computing device 112 may each include a memory medium on which computer programs or data according to the present invention may be stored. For example, each NMD 106 may store a received offer specification. Each NMD 106 may also store and execute an offer engine software program for applying or using the offer specification and providing offers based on the offer specification. The offer server 102 may store a user interface program (or offer specification generation program) executed by the offer server 102 and used for configuring the offer specification in the offer server 102. The offer server 102 may also store software for distributing offer specifications to specified NMDs 106 in the network. The provider system 104 may store web browser software used for accessing the offer server 102. One or more of the various devices may also store various data, such as a digital certificate received from the user, demographic information of the user, geographic information of an AP, NMD or user PCD, and an offer specification. The above systems may store and execute various other computer programs, as desired.

The memory mediums on each of the provider system 104, the offer server 102, the NMDs 106, the APs 108, and/or the user device 112 thus may store software or data for performing a variety of functions including, but not limited to: enabling product providers to enter and maintain offer specifications for making offers for products to users connected to network 100; allowing users to manage and/or control their demographic information in a network system; and to allow NMDs 106 to apply information including demographic and geographic location information to an offer specification, e.g., to rules comprised in the offer specification. The software programs may be implemented in any of various ways. Also, the digital certificate may have any of various forms. A processor executing code and data from a memory medium comprises a means for implementing various of the steps performed in the network system described herein.

The term "memory medium" is intended to include various types of memory or storage, including an installation medium, e.g., a CD-ROM, or floppy disks, a computer system memory, e.g., random access memory (RAM), such as DRAM, SRAM, EDO RAM, Rambus RAM, etc., or a non-volatile memory such as a magnetic media, e.g., a hard drive, or optical storage. The memory medium may comprise other types of memory as well, or combinations thereof. In addition, the memory medium may be located in a first computer in which the programs are executed, or may be located in a second different computer that connects to the first computer over a network. In the latter instance, the second computer provides the program instructions to the first computer for execution. In addition, the offer server 102, NMDs 106, APs 108 and/or provider system 104 may take various forms, including a computer system, mainframe computer system, workstation, or other device. In general, the term "computer system" or "server" can be broadly defined to encompass any device having a processor that executes instructions from a memory medium.

Various embodiments further include receiving or storing instructions and/or data implemented in accordance with the foregoing description upon a carrier medium. Suitable carrier media include memory media as defined above, as well as signals such as electrical, electromagnetic, or digital signals, conveyed via a communication medium such as networks and/or a wireless link.

The network communications system as illustrated and described in Figure 1 may be implemented at any level including local, regional, and worldwide. For example, NMDs 106 and APs 108 are preferably distributed in various locations for access by users. Offer server 102 and provider system 104 may be located in any of various

locations on the network, as desired. The following are intended as examples and are not intended to be limiting in any way. As one example, NMDs 106 are connected to the Internet, and APs 108 are connected to the NMDs 106 as shown in Figure 1. NMDs 106 and APs 108 are preferably distributed in various locations for access by users. Offer server 102 and provider system 104 are also coupled to the Internet, and browser software executing on the provider system 104 is used to access the offer server 102 for configuring offers. The offer server 102 then distributes configured offer specifications to the NMDs 106 via the Internet, or the NMDs 106 retrieve offer specifications from the offer server 102. As another example, a network communications system may be implemented locally in a mall or business, including an offer server 102, provider system 104, NMDs 106, and APs 108. As another example, a company may implement a local, regional or worldwide network communications system (proprietary or non-proprietary system, e.g., an Internet-based system) with one or more offer servers 102, for example, at the organizational headquarters, which may be accessed by providers 104 distributed throughout the organization for entering and modifying offer specifications to be offered to users by NMDs 106 with associated APs 108 at the various local presences of the company.

A local, regional, national, or worldwide network communications system may allow two or more providers 104 associated with two or more businesses to access one or more offer servers 102 for maintaining offer specifications and for downloading offer specifications to NMDs 106 at various sites distributed throughout the range of the network communications system.

Figure 2A - Wireless Network Communication System

Figure 2A shows one embodiment of a wireless network communication system. The wireless network communication system may include a user device 112a with a wireless connection 114 (e.g., an antenna) in communication with a wireless access point (AP) 108a having a wireless connection 110 (e.g., an antenna). The AP 108a may be coupled to a network management device (NMD) 106. NMD 106 may be coupled to a provider system 104 and an offer server 102 through network 100. The network 100 may comprise a wired network, a wireless network or a combination of wired and wireless networks. In one embodiment, NMD 106 may couple to a plurality of wireless access points 108a.

The wireless network communication system may be geographic-based. In other words, the network communication system may provide information and/or services to mobile users (MUs) based at least partly on the known geographic location of the MU, e.g., as indicated by the AP 108a or as indicated by geographic information (e.g., GPS information) provided from the user device 112a.

The wireless communication system may include a plurality of wireless access points (APs) 108a, a plurality of NMDs 106, a plurality of providers 104, and/or a plurality of offer servers 102. Wireless APs 108a for the network may be widely distributed in various facilities, such as airports, mass-transit stations, shopping malls, and other businesses, such as car rental agencies, shops, coffee shops and/or restaurants at an airport. When in sufficiently close range to an AP 108a, the user device 112a may access the network through, for example, a wireless network card. In one embodiment, the APs 108a are arranged at known geographic locations and may provide geographic location information regarding the geographic location of the MU and/or the user device 112a. In another embodiment, the user device 112a may provide geographic location information of the user device 112a through the AP 108a to the NMD 106. For example, the user device 112a may include GPS (Global Positioning

System) equipment to enable the user device 112a to provide its geographic location through the AP 108a to the NMD 106.

The NMD 106, provider system 104 and offer server 102 each may comprise a computer system coupled to the network 100. The network 100 may comprise one or more wired or wireless local area networks and/or one or more wide area networks (e.g., the Internet). Each provider system 104 may include one or more computers or computer systems configured to provide goods, information, and/or services as appropriate for the service provider. The one or more providers 104 may connect to network 100 in a wired or wireless fashion. An offer server 102 may be comprised in a provider system 104, or a provider system 104 may be comprised in an offer server 102.

The wireless communication between AP 108a and NMD 106 may be accomplished in a number of ways. In a preferred embodiment, user device 112a and wireless AP 108a are both equipped with an appropriate transmitter and receiver compatible in power and frequency range (e.g., 2.4GHz) to establish a wireless communication link (e.g., wireless connection 114 and wireless connection 110, respectively). Wireless communication may also be accomplished through cellular, digital, or infrared communication technologies, among others.

To provide user identification and/or ensure security, the user computing device 112 may also be equipped with identification or encryption technology. For example, the user device 112 may be operable to generate a digital certificate or identification data that may be transmitted to and recognized by the wireless AP 108a. This identification data may then be relayed to NMD 106 that is coupled to wireless AP 108. Such an identification data may utilize recognition of a user before providing access to system services, thereby providing a measure of security and a service billing mechanism. As described above, the user device 112a may also selectively provide a digital certificate or other data to selectively enable the use or access of demographic information of the user. In one embodiment, the demographic information of the user may be used in conjunction with the known geographic location of the user to provide specific or targeted information (e.g., advertising, offers, enticements, etc.), services or products to the user.

Figure 2B - Wired Network Communication System

Figure 2B shows one embodiment of a wired network communication system. The wired network communication system may include a user device 112b coupled to an access point (AP) 108b through wired connection 116. The user device 112b may be a desktop computer, e.g., a "non-portable" computing device, coupled to AP 108b. User device 112b may also be a portable computing device (PCD) as described above. The AP 108b may be coupled to a network management device (NMD) 106. NMD 106 may be coupled to a provider system 104 and an offer server 102 through network 100. The network 100 may comprise a wired network, a wireless network or a combination of wired and wireless networks. In one embodiment, NMD 106 may couple to a plurality of wired access points 108b.

Embodiments of a wired network communications system may function substantially similarly to the wireless network communications system illustrated and described in Figure 2A, with the noted exception that user device 112b may couple to AP 108b using a wired connection 116. In one embodiment, AP 108b may provide one or more ports or receptacles for accepting a connector on a first end of a cable or wire, and user device 112b may include one or more ports for accepting a connector on a second end of the cable. In one embodiment, to establish

wired connection 116, the first end of the cable is plugged into a port on AP 108b, and the second end of the cable is plugged into a port on user device 112b. In one embodiment, the AP 108b may sense the connection and automatically begin a communications session with user device 112b. In another embodiment, the user of user device 112b may perform a logon or other connection function subsequent to connection to thus establish a communication session.

An example of a wired network communication system follows. The example is not intended to be limiting in any way. In an airport or other facility, one or more access points 108b may be provided that allow users with user devices 112b to connect to and access the services provided by the NMD 106 that supports the APs 108b, including access to network 100. Upon establishing a wired connection 116, demographic and geographic information may be provided to NMD 106 for user device 112b. NMD 106 may then apply this information to rules in an offer specification to generate and provide one or more offers of goods or services from provider system 104 to the user.

Thus, in various other embodiments, the network communication system may be a wireless network communication system, a wired network communication system or a hybrid (wired and wireless) system. For more information on possible embodiments of the system, including various embodiments of the access points 108 and the user device 112a, please see U.S. Patent Nos. 5,835,061 and 5,969,678, and U.S. patent application Serial No. 09/433,817, which are hereby incorporated by reference as though fully and completely set forth herein.

In one embodiment, a network communication system may include a combination of wireless APs 108a and wired APs 108b as illustrated in Figures 2A and 2B. In this embodiment, an NMD 106 may be coupled to one or more of wireless APs 108a and/or one or more of wired APs 108b.

Figure 2C - Network Communication System with combined NMD and AP

Figure 2C is a block diagram illustrating one embodiment in which an NMD 106 incorporates one or more APs 108. In this embodiment, connection technology (wired and/or wireless) may be integrated in the NMD 106. The embodiment illustrated in Figure 2C may function substantially similarly to the embodiments as described for Figure 2A and 2B to provide wireless and/or wired connections to user devices 112, with the noted exception that a wireless or wired connection may be established directly between the user device 112 and the NMD 106.

Figure 3 - Configuring, Distributing and Executing Offer Specifications

Figure 3 is a flowchart illustrating one embodiment of a method for configuring and distributing offer specifications for offers of products to various devices in a network. It is noted that various steps in the flowchart of Figure 5 are optional and may be omitted. Also, various steps may occur concurrently or in different orders than that shown.

In step 150, a provider may access an offer server 102 using provider system 104. The offer server 102 may present a graphical user interface (GUI) for display on the provider system 104. For example, the provider system 104 may include a web browser used to access the GUI of the offer server 102. Alternatively, the provider system 104 may simply log on to the offer server 102 directly, without connecting to the offer server 102 through the network 100. In one embodiment, the user of the provider system 104 may use a challenge-response access method

(such as a password-protected account logon) to access offer server 102. Other logon and security methods may also be used.

In one embodiment, the offer server 102 may include one or more offer databases storing a plurality of possible offers. The offer server 102 may also include various sets of rules or other offer specification configuration information for determining provision of offers specified by one or more providers 104. For example, the offer server 102 may store one or more databases of offers, rules or other offer specification configuration information. In one embodiment, the offer server 102 may support a database language such as SQL that may be used in creating, editing or otherwise managing the databases or other information stored on the server. In one embodiment, the offer server 102 may support a data representation language such as Hypertext Markup Language (HTML) or eXtensible Markup Language (XML). The offer server 102 may also store various offer specification templates that can be used or easily modified in creating an offer specification.

In step 152, the user of the provider system 104 may optionally specify offers and/or configure an offer specification using the one or more offer databases on offer server 102. In step 152, the user of the provider system 104 may configure one or more rules in the offer specification. The one or more rules may define parameters for evaluating demographic, geographic, and other information about users in determining one or more offers for products to be provided to users in the mobile network environment. The one or more rules may also define parameters for evaluating other information in determining one or more offers for products to be provided to users, such as provider inventory, time of year for seasonal product offerings, etc. In one embodiment, the rules may be entered and/or modified using a database language such as SQL, or alternatively in a data representation language such as Hypertext Markup Language (HTML) or eXtensible Markup Language (XML). In one embodiment, the user may enter the rules using a user interface to the one or more offer databases. In one embodiment, the user interface may be a GUI. An offer specification may include one or more offers to be presented to users and/or one or more rules for determining which users are to receive the offers, and may also include other offer information.

In step 154, the user of the provider system 104 may select one or more NMDs 106 or APs 108 to receive the new or modified offer specification(s). In one embodiment, NMDs 106 may be selected in groups. For example, a plurality of NMDs 106 may exist in various hotels of a hotel chain. Instead of selecting each of the NMDs 106 in the various hotels separately, the user of the provider system 104 may select the group including all the NMDs 106 in all of the hotels of that hotel chain. As another example, a plurality of NMDs 106 may be distributed throughout a shopping mall. Instead of selecting each of the NMDs 106 in the mall separately, the user of the provider system 104 may select the group including all the NMDs 106 in the mall. As yet another example, a business (such as a car rental agency) may have a group of NMDs 106 wherein the NMDs 106 in the group are located at various airports, train stations, hotels, malls, etc. where the business has a presence. In this case, the car rental agency (provider) may select all NMDs 106 at its respective locations. Other examples of groups of NMDs 106 may include, but are not limited to: a city may have a plurality of NMDs 106 located at various points, and the NMDs 106 at various locations in the city may be included in a group; an airport may include a number of NMDs 106 at various points in the terminal, and thus the NMDs 106 may be included in a group; etc.

In step 156, the new or modified offer specification(s) entered in step 152 may be downloaded to the one or more NMDs 106, or groups of NMDs 106, as selected in step 154. An offer specification may include one or more offers and/or one or more rules for determining users to receive the offer(s), and may possibly include other

information used in selecting or modifying offers. In one embodiment, the offer server 102 may connect to the one or more NMDs 106 and download the offer specifications using a "push" method. In another embodiment, the NMDs 106 may connect to the offer server 102 and download the offer specifications using a "pull" method. In one embodiment, the connecting and downloading of the offer specifications may be initiated by the user of the provider system 104 subsequent to selecting the NMDs 106 in step 154. In another embodiment, the connecting and downloading may be a scheduled event that is performed manually or automatically by the offer server 102 or by the NMDs 106. For example, the offer server may periodically connect to all NMDs 106 that have been selected for downloading, as in step 154, and download one or more offer specifications to the NMDs 106. Alternatively, each of the NMDs 106 may periodically connect to the offer server 102 and download their respective offer specifications.

In step 158, the one or more NMDs 106 specified by the provider system 104 may receive the one or more new or modified offer specifications entered in step 152 and downloaded in step 156. The NMDs 106 may include memory storage, and may store the offer specifications received in step 156 in the memory storage. In one embodiment, an NMD 106 may store and maintain one or more offer specifications for one or more providers 104. In addition, an NMD 106 may be associated with two or more offer servers 102 on network 100, and thus may receive offer specifications from multiple offer servers.

In step 160, the NMDs 106 may access the offer specifications to provide offers for products to one or more detected users in the mobile computing environment. Embodiments of step 160 are discussed in greater detail with respect to Figures 4 and 5.

Offers

Offers may be stored on the NMD 106, on the offer server 102, on the provider system 104, or on other servers on the network 100. In one embodiment, the offers may be stored and maintained with the offer specifications. In another embodiment, the offers may be stored and maintained separately. In one embodiment, after determining one or more offers that are to be provided to a user, the NMD 106 may facilitate the transmittal of the offer to the user's user device 112. In one embodiment, in the offer specifications, the provider system 104 may include information that may be used in locating and/or transmitting the offer to users who qualify for the offer based upon the application of the rules to the users' demographic and/or geographic information. For example, the offer specification may include a Uniform Resource Locator (URL) for each offer or group of offers, and the URL may be provided to the user device 112 of a qualified user. The user device 112 may then connect to the URL to display the offer. Alternatively, the URL in the offer specification may be provided to the source of the offer to display the offer on the user device 112. For example, the offer may be displayed as content on a Web page that may be displayed on a browser on the user device 112. Offers may include one or more types of digital information including, but not limited to: text, images, Web links, digital audio, and digital video.

Offer Engine

In one embodiment, each NMD 106 may include an offer engine, implemented in software and/or hardware, which may be used to apply rules included in offer specifications to demographic, geographic, and/or other user information or provider information (vendor information), and to determine which, if any, of one or

more offers for products are to be provided to a user. The offer engine may apply one or more offer specifications from a plurality of providers 104 to user information obtained from a plurality of users that connect to NMD 106.

In one embodiment, offer specifications may include date and/or time information that allow the specifications to expire after a period. For example, an offer specification may be valid for seven days, or until the next Sunday. The NMD 106 may detect offer specifications that have expired, and may dispose of the expired specifications. In one embodiment, the offer engine may, when accessing an offer specification, determine if the specification is expired. If an offer specification is determined to have expired, the NMD 106 may operate to automatically retrieve an updated offer specification from an offer server 102.

10 Figure 4 - Providing offers for products to users according to an offer specification

Figure 4 is a flowchart illustrating one embodiment of a method for providing offers for products to users according to an offer specification.

In step 200, a user computing device 112 may connect to a network. For example, the user may have a user device 112 with wireless capabilities, and may move the user device 112 into wireless range of an AP 108 with wireless capabilities. As another example, the user may have a user device 112 with wired connection capabilities, and may connect the user device 112 to an AP 108 with wired connection capabilities.

In step 202, one or more offers may be provided to the user of user device 112 according to one or more offer specifications. Offers may be provided to the user from one or more providers 104. In one embodiment, an offer specification may specify that all users that connect to the network are to receive a particular offer, and thus no rules may be applied to user information or provider information. If the NMD 106 has multiple stored offer specifications, the NMD 106 may provide offers to the user corresponding to all of the stored offer specifications. Alternatively, the NMD 106 may provide offers from one of the stored offer specifications according to some selection protocol, such as a rotational selection process, or a random or pseudo-random selection process. Thus, for example, the NMD 106 may rotate between providing offers from different offer specifications for different users as users connect to the AP 108.

In one embodiment, geographic information may be used in determining whether an offer is to be made to a user, and/or in determining the content of the offer for the user. In one embodiment, demographic information may be used in determining offers. In one embodiment, demographic and geographic information may be used in determining offers.

For example, and not intended to be limiting in any way, a first offer specification may describe an offer A for all users that connect to the network. A second offer specification may describe an offer B for users that connect to the network while located in the hotel. A third offer specification may describe an offer C for users that connect to the network while located in the hotel and that are from out-of-town. A fourth offer specification may describe an offer D for users that work for Company X and that connect to the network while located in the hotel. Thus, a user from out of town who works for Company X, and connects to the network while staying in the hotel, may receive offers A, B, C and D. As another example, the third offer specification may further qualify the offer C into offer C1 for users from City M and an offer C2 for users from City N.

Figure 5 - Providing customized offers for products to users

Figure 5 is a flowchart illustrating one embodiment of a method for providing customized offers for products to mobile users in a mobile network environment. It is noted that various steps in the flowchart of Figure 5 are optional and may be omitted. Also, various steps may occur concurrently or in different orders than that shown.

In step 200, a user computing device 112 of a user may connect to the network.

In step 204, the user computing device 112 may transmit a form of identification (ID) to the network. In one embodiment, the user's user device 112 may include a digital certificate associated with the user, and the digital certificate may be transmitted to the NMD 106 and/or to a process running on another server or device on the network. Other forms of IDs may be used, including, but not limited to, public keys used in public/private encryption, digital signatures and passwords.

In step 206, the ID sent in step 204 may be examined and validated. In one embodiment, a process on the NMD 106 that received the ID may examine and validate the ID. In another embodiment, the ID may be sent to another device on the network for validation. For example, an NMD 106 that receives a digital certificate from a user's user device 112 may send the digital certificate to a server on the network, and the server may examine and validate the digital certificate for the NMD 106. Alternatively, the NMD itself 106 may validate the digital certificate.

In step 208, geographic information may be transmitted to the network. In one embodiment, the user device 112 may transmit geographic information to the network. For example, the user device 112 may have GPS capabilities, and may transmit its GPS location to the NMD 106 to which it is connected. In another embodiment, an AP 108 to which the user's user device 112 is connected may transmit geographic information to the network. In yet another embodiment, the geographic location information of the APs 108 connected to an NMD 106 may be stored on the NMD 106, and thus geographic information may not be transmitted to the NMD 106, as it may obtain the geographic information from the stored geographic information of the APs 108.

In step 210, the demographic information of the user may be accessed. In one embodiment, the NMD 106 may send an ID such as a digital certificate to a server comprising demographic information of a plurality of users, and the server may return demographic information of the user who supplied the ID to the NMD 106. In one embodiment, at least a portion of the demographic information may be comprised in a digital certificate and/or other information supplied by the user in step 204, and thus may be accessed directly from the digital certificate and/or other information. In one embodiment, at least a portion of the demographic information may be on the user's user device 112, and the demographic information may be accessed from the user device 112.

In step 212, one or more offer specifications may be applied to the demographic and/or geographic information accessed in step 210 to determine whether or not to make an offer or offers to the user. The application of rules comprised in offer specifications to user information is further illustrated and discussed in the examples below. In step 212, if applying the offer specifications to the user information result in determining not to make an offer to the user, the process is done. If applying the offer specifications to the user information result in determining to make an offer to the user, the flow proceeds to step 214.

In step 214, one or more offers may be provided to the user. In one embodiment, the one or more offers may be provided to and displayed on the user's user device 112. The offer may be in any of various forms

receivable by and displayable on the user's user device 112 including, but not limited to: text, graphics, digital image, audio, links such as Web page addresses, etc.

Example Operation

5 By way of example, and not intended to be limiting in any way, the provider system 104 may have configured an offer specification that specifies an offer to be provided to users at a particular NMD 106 in step 152. In step 154, the provider may select the NMD 106 to receive the offer. In this example, the offer specification specifies that the offer is to be presented to substantially all users who connect to the specified NMD 106. Alternatively, in step 152, the user of the provider system 104 may have specified an offer to be provided to users
10 at a particular NMD 106, and may also have specified a set of rules in the offer specification for determining which users of the NMD 106 are to receive the offer. In this case, in step 160 when a user connects to the NMD 106, the rules set in the offer specification would be applied by the offer engine executing on the NMD 106, possibly using demographic and/or geographic information about the user, to determine if the user is to receive the offer. In step 158, the offer specification may be downloaded to the NMD 106.

15 A user with a user device 112 may come into wireless range of an AP 108 connected to the NMD 106 that received and stored the offer specification in step 158. The AP 108 may detect the user device 112 and initiate a connection between the user device 112 and the NMD 106. Alternatively, the NMD 106 may include wireless capabilities, and may itself initiate the connection to the user device 112.

The NMD 106 may then optionally obtain demographic and/or geographic (location) information about
20 the user. In one embodiment, the NMD 106 may obtain a digital certificate from the user device 112, and may use the digital certificate to access demographic information of the user from one or more servers on the network 100. In one embodiment, the user device 112 may provide demographic information to the NMD 106. In one embodiment, the AP 108 may be at a known geographic location, or alternatively may include GPS capabilities, and may provide geographic location information to the NMD 106. Alternatively, the user device 112 may provide
25 geographic location information to the NMD 106. The NMD 106 may then apply the rules included in the offer specification received in step 158 to the demographic and/or geographic information of the user to select or generate one or more offers for products for the user of the user device 112. The NMD 106 may in addition or instead apply the rules included in the offer specification to other information, such as provider information, e.g., current provider inventory, etc.

30 Alternatively, the NMD 106 may provide an offer specified in an offer specification received in step 158 to the user by displaying the offer on the user device 112, and without applying rules to user information. In this example, the offer may be provided to substantially all users who connect to the NMD 106.

By way of further example, and not intended to be limiting in any way, the provider system 104 may be a car rental agency X. The offer specification entered by the provider system 104 in step 152, and downloaded to the
35 NMD 106 in steps 156 and 158, may be used to determine users who meet certain criteria as specified in the offer specifications, and who thus may receive an offer or offers for a reduced rental rate or an upgrade to a more expensive rental car. The demographic information may include the user's name, company affiliation, car rental history (who has the user rented from before?), participation in a car rental membership program, etc. The geographic location may also be used to determine the proximity of the user to a car rental franchise of the agency

X and/or to a car rental franchise of a competitor of the agency. The NMD 106 may apply the offer specification to the demographic and/or geographic information. In one embodiment, an offer engine executing on the NMD 106 applies the offer specification to the demographic and/or geographic location information.

In this example, the NMD 106 and its associated APs 108 may be in an airport with two or more car rental franchises including an X agency franchise, and the geographic information may be used to determine that the user is near a competitor Y agency's franchise. The demographic information may be used to determine that the user works for Company Z, and that the user has previously rented cars from agency Y. The offer specification entered at step 152 and downloaded in steps 156 and 158 may be applied to this information. For example, the offer specification may include rules statements that, when applied to the user's information, may make offers to the user similar to the following examples:

"If the user is near agency Y's franchise, and the user has previously rented from agency Y but not from us (agency X), and the user has previously rented compact cars, and the user works for Company Z, then offer the user a reduced rate on a luxury car."

OR

"If the user is near our (agency X's) franchise, and the user works for Company Z, and the user has rented cars from us (agency X) four or more times in the last year, then offer the user one free rental day and bonus frequent flier miles."

Applying the offer specifications to the demographic and/or geographic information about the user may also result in determining *not* to make an offer to the user. Using the above example, it may be determined that the user's company (Company Z) requires the user to use agency Y, for example through contractual obligation, and thus agency X may choose not to provide an offer to the user.

In one embodiment, an NMD 106 may include offer specifications from more than one provider system 104. In this embodiment, when a user connects to an NMD 106, the user's demographic and/or geographic information may be applied to more than one offer specification. Thus, one or more offers may be provided to the user from one or more product providers. Using the above example, agency X and agency Y may both have offer specifications on the NMD 106, and the demographic and/or geographic information of the user may be applied to offer specifications from both agencies. Thus, both agency X and agency Y may provide offers to the user on user device 112. In this example, the user may participate in an impromptu reverse auction with each of the providers to determine the "best deal" on a rental car. The user may also receive other offers from one or more other providers 104 who have offer specifications stored on the NMD 106.

The offer specifications thus may include rules that may be applied to demographic and/or geographic user information in determining offers. In some embodiments, the offer specification may include rules for using other information in determining whether or not to make offers. In one embodiment, this other information may include time and/or date information. As examples, rules may be included in an offer specification that restrict certain offers to certain times of day (e.g. between 9 am and 5 pm), certain days of the week (e.g. only on weekends), or during certain seasonal times, such as Christmas, Valentines Day, etc. In one embodiment, rules may be included that limit the duration of offers. For example, an offer may be specified to expire after a period or on a certain day. In one embodiment, the NMD and/or the offer server may periodically "garbage collect" the offer database(s) to remove expired offer specifications.

Offers may be provided to users selected "randomly", e.g. by using non-user-specific information. For example, the offer specification may instruct the NMD 106 to provide a particular offer to every 10th user, or to provide the offer to every nth user, where n is a randomly generated number. Time-based offers may also be provided to users. For example, a store that sells perishable goods may provide special offers to users who connect
5 to the NMD 106 in the last hour before closing time. As another example, an airline may, in an effort to fill a flight, make special ticket offers to users in an airport if there are seats available on the flight and it is departing within the next two hours.

While the present invention has been described with reference to particular embodiments, it will be understood that the embodiments are illustrative and that the invention scope is not so limited. Any variations,
10 modifications, additions, and improvements to the embodiments described are possible. These variations, modifications, additions, and improvements may fall within the scope of the inventions as detailed within the following claims.

WHAT IS CLAIMED IS:

1. A method for providing an offer specification specifying offers for products in a network system, the method comprising:

5 generating an offer specification, wherein the offer specification includes one or more offers of products; specifying one or more Network Management Devices (NMDs) in the network system to receive the offer specification; and providing the offer specification to each of the one or more NMDs.

10 2. The method of claim 1, wherein each of the one or more NMDs is operable to use the offer specification in providing offers to users in the network system.

15 3. The method of claim 1, wherein said generating the offer specification includes selecting the one or more offers from a plurality of possible offers.

20 4. The method of claim 1, wherein said specifying comprises specifying one or more Network Management Devices (NMDs) of a plurality of possible NMDs, wherein the specified one or more NMDs comprise a subset of the plurality of possible NMDs.

5. The method of claim 4, wherein said generating, said specifying, and said providing are performed a plurality of times to provide different offer specifications to different subsets of the plurality of possible NMDs.

25 6. The method of claim 4, wherein the plurality of possible NMDs comprise NMDs of a plurality of providers; wherein said specifying comprises specifying the one or more NMDs of a first provider of the plurality of providers.

30 7. The method of claim 6, wherein the first provider of the plurality of providers is a first hotel provider; wherein said specifying comprises specifying the one or more NMDs at hotels of the first hotel provider.

35 8. The method of claim 1, further comprising: generating a new offer specification, wherein the new offer specification includes a different one or more offers of products; specifying one or more Network Management Devices (NMDs) in the network system to receive the new offer specification; and providing the new offer specification to each of the one or more NMDs;

wherein each of the one or more NMDs is operable to use the new offer specification in providing offers to users in the network system.

9. The method of claim 1, wherein said generating the offer specification comprises:
5 a client system accessing an offer server via the network; and
the client system providing offer information regarding the offer specification to the offer server, wherein said offer information operates to generate the offer specification.

10. The method of claim 9, wherein said specifying further comprises:
10 the client system providing NMD information regarding the one or more Network Management Devices (NMDs) in the network system to receive the offer specification to the rules server, wherein said NMD information operates to specify the one or more NMDs.

11. The method of claim 9, wherein said generating the offer specification further comprises:
15 the client system displaying a graphical user interface of the rules server in a web browser of the client system;
the client system receiving user input to the graphical user interface to configure the offer specification;
and
the client system receiving user input to specify the one or more NMDs.

20 12. The method of claim 1, further comprising:
a user computing device of a user connecting to a first NMD of the one or more NMDs;
the first NMD providing at least one of the one or more offers of products to the user computing device according to the offer specification.

25 13. The method of claim 1, wherein each of the one or more NMDs comprises an access point for coupling to user computing devices, the method further comprising:

a user computing device of a user connecting to a first NMD of the one or more NMDs;
the first NMD providing at least one of the one or more offers of products to the user computing device.

30 14. The method of claim 1, further comprising:
a user computing device of a user connecting to a first access point in the network system, wherein the first access point is coupled to a first NMD of the one or more NMDs;

35 the first NMD providing at least one of the one or offers of products through the first access point to the user computing device.

15. The method of claim 1,
wherein the offer specification further includes one or more rules for providing offers of products to users;

wherein each of the one or more NMDs is operable to use the one or more rules in the offer specification in providing offers to users in the network system.

16. The method of claim 15, further comprising:

5 a first NMD determining a first one or more offers to be provided to a first user computing system of a first user in accordance with the offer specification, wherein said determining the first one or more offers includes analyzing the rules comprised in the offer specification;

providing the first one or more offers to the first user computing system after said determining;

10 the first NMD determining a second one or more offers to be provided to a second user computing system of a second user in accordance with the offer specification, wherein said determining the second one or more offers includes analyzing the rules comprised in the offer specification, wherein the second one or more offers are different than the first one or more offers; and

providing the second one or more offers to the second user computing system after said determining;

15 17. The method of claim 15,

wherein the one or more rules comprise rules for providing offers of products to users based on information of the users.

18. The method of claim 17,

20 wherein the one or more rules comprise rules for providing offers of products to users based on demographic information of the users.

19. The method of claim 17,

25 wherein the one or more rules comprise rules for providing offers of products to users based on geographic location information of the users.

20. The method of claim 17, further comprising:

a computing device of a user connecting to the network system;

a first NMD of the one or more NMDs accessing information of the user;

30 the first NMD determining a first one or more offers to be provided to the user in accordance with the offer specification, wherein said determining uses the information of the user; and

providing the first one or more offers to the user after said determining, wherein the first one or more offers comprise one or more offers of products to the user.

35 21. The method of claim 20, wherein the information of the user includes one or more of demographic information of the user and geographic location information of the user.

22. The method of claim 20, further comprising:

the computing device providing identification information to the first NMD;

wherein the first NMD uses the identification information in determining the information of the user.

23. The method of claim 22, wherein the identification information is provided to the first NMD in a digital certificate associated with the user.

24. The method of claim 22, further comprising:
the first NMD determining the user is a valid user using the identification information.

25. The method of claim 22, wherein said accessing the information of the user comprises:
obtaining demographic information of the user using the identification information.

26. The method of claim 25, wherein said obtaining demographic information of the user using the identification information comprises:

providing the identification information to a server on the network system, wherein the server stores demographic information of a plurality of users of the network system; and

the server providing the demographic information of the user to the first NMD in response to said providing the identification information.

27. The method of claim 20,
the first NMD accessing the information of the user from the computing device.

28. The method of claim 27, wherein the computing device comprises a digital certificate associated with the user, the method further comprising:

the computing device providing the digital certificate to the first NMD;

the first NMD determining the user is a valid user using the digital certificate; and

wherein said accessing the information of the user comprises:

the first NMD obtaining demographic information of the user using the digital certificate.

29. The method of claim 20, wherein the computing device is a portable computing device (PCD).

30. The method of claim 20, wherein said connecting comprises the computing device of the user connecting to the network system in a wireless manner.

31. The method of claim 20, wherein said connecting comprises the computing device of the user connecting to an access point coupled to the first NMD.

32. The method of claim 17, further comprising:
a first computing device of a first user connecting to the network system;
a first NMD of the one or more NMDs accessing information of the first user;

the first NMD determining a first one or more offers to be provided to the first user in accordance with the offer specification, wherein said determining uses the information of the first user; and
providing the first one or more offers to the first computing device after said determining;
a second computing device of a second user connecting to the network system;
5 the first NMD of the one or more NMDs accessing information of the second user;
the first NMD determining a second one or more offers to be provided to the second user in accordance with the offer specification, wherein said determining uses the information of the second user, wherein the second one or more offers are different than the first one or more offers; and
providing the second one or more offers to the second computing device after said determining.

10 33. A method for providing offer specifications for offers for products or services in a network system, the method comprising:

providing a plurality of Network Management Devices (NMDs);
providing an offer server for generating and storing offer specifications, and for transmitting the offer
15 specifications to the NMDs in the network system, wherein the offer specifications include rules for providing offers for products to users of the network system in accordance with information of the users;
generating one or more offer specifications on the offer server;
specifying one or more of the plurality NMDs to receive the generated one or more offer specifications;
the offer server transmitting the one or more offer specifications to the one or more NMDs;
20 the one or more NMDs receiving the transmitted offer specifications; and
the one or more NMDs storing the received offer specifications.

34. The method of claim 33,
wherein each of the one or more NMDs is operable to use the offer specification in providing offers to
25 users in the network system.

35. The method of claim 33, wherein said generating the offer specification includes selecting the one or more offers from a plurality of possible offers.

30 36. The method of claim 33, wherein said specifying comprises specifying one or more Network Management Devices (NMDs) of a plurality of possible NMDs, wherein the specified one or more NMDs comprise a subset of the plurality of possible NMDs.

35 37. The method of claim 36, wherein said generating, said specifying, and said providing are performed a plurality of times to provide different offer specifications to different subsets of the plurality of possible NMDs.

38. The method of claim 33, further comprising:
a computing device of a user accessing the network system;

a first NMD of the one or more NMDs accessing information of the user; and
the first NMD generating an offer for the user in accordance with the offer specification and the information of the user, wherein the offer is an offer of a product to the first user.

5 39. The method of claim 33,
 wherein the one or more rules comprise rules for providing offers of products to users based on demographic information of the users.

 40. The method of claim 33,
10 wherein the one or more rules comprise rules for providing offers of products to users based on geographic location information of the users.

 41. A method for providing offer specifications for offers for products in a network system, the method comprising:
15 generating an offer specification, wherein the offer specification includes one or more rules for providing offers for products to users in accordance with information of the users;
 specifying one or more Network Management Devices (NMDs) on the network to receive the offer specification; and
 providing the offer specification to each of the specified one or more NMDs.

20 42. The method of claim 41,
 wherein the one or more rules comprise rules for providing offers of products to users based on demographic information of the users.

25 43. The method of claim 41,
 wherein the one or more rules comprise rules for providing offers of products to users based on geographic location information of the users.

 44. A method for providing offers for products to users in a network system, the method comprising:
30 a network management device (NMD) in the network system receiving an offer specification in the network system;
 a computing device of a user accessing the network system;
 the NMD receiving information regarding the user;
 the NMD determining a first one or more offers to be provided to the user in accordance with the offer
35 specification, wherein said determining uses the information of the user; and
 the NMD providing the one or more offers for products to the computing device of the user after said determining.

45. The method of claim 44,
wherein the offer specification includes one or more rules for providing offers of products to users;
wherein said determining comprises the NMD determining the first one or more offers to be provided to
the user in accordance with the one or more rules in the offer specification.

46. The method of claim 45,
wherein the one or more rules comprise rules for providing offers of products to users based on
demographic information of the users;

47. The method of claim 45,
wherein the one or more rules comprise rules for providing offers of products to users based on geographic
location information of the users;
wherein said determining comprises the NMD determining the first one or more offers to be provided to
the user in accordance with geographic location information of the user.

48. A system, comprising:
an offer server operable to be coupled to a network, wherein the offer server stores one or more offer
specifications, wherein each offer specification includes one or more rules for providing offers for products to users
in accordance with information of the users;

a plurality of Network Management Devices (NMDs) operable to be coupled to the network;
wherein the offer server is operable to provide at least one offer specification to a selected subset of the
plurality of NMDs over the network;

wherein the selected subset of the plurality of NMDs is operable to receive and store the at least one offer
specification;

wherein each of the selected subset of the plurality of NMDs is operable to use the at least one offer
specification to select offers to be provided to computing devices of users based on the at least one offer
specification and based on information of the users.

49. The system of claim 48,
wherein each offer specification further includes one or more offers.

50. The system of claim 49, wherein the one or more offers are selected from a plurality of possible
offers.

51. The system of claim 49, wherein each offer specification includes information specifying one or
more offers.

52. The system of claim 48, wherein the offer server is programmable to provide different offer
specifications to different subsets of the plurality of NMDs over the network during different time periods.

53. The system of claim 48,
wherein the one or more rules comprise rules for providing offers of products to users based on demographic information of the users.

5 54. The system of claim 48,
wherein the one or more rules comprise rules for providing offers of products to users based on geographic location information of the users.

10 55. The system of claim 48,
wherein the offer server is operable to present a user interface for generating an offer specification on the offer server.

56. The system of claim 48, further comprising:
a client system operable to be coupled to the network;
15 wherein the client system is user-operable to:
access the offer server via the network;
configure an offer specification on the offer server; and
specify one or more NMDs to receive the offer specification.

20 57. The system of claim 48, further comprising:
a computing device operated by a first user and operable to couple to the network;
wherein the selected subset of NMDs includes a first NMD;
wherein the first NMD is operable to:
access information of the first user; and
25 generate a first offer to the computing device of the first user in accordance with the offer specification and using the information of the first user.

30 58. The system of claim 57, wherein the information of the first user includes demographic information of the first user.

59. The system of claim 57, wherein the information of the first user further includes geographic location information of the first user.

35 60. The system of claim 57, wherein the information of the first user includes demographic information of the first user;
wherein the computing device includes identification information of the first user;
wherein the computing device is operable to provide the identification information to the first NMD;
wherein the first NMD is further operable to obtain demographic information of the first user using the identification information.

61. The system of claim 60, further comprising
an information server operable to couple to the network, wherein the information server stores
demographic information of a plurality of users;

wherein, in said obtaining demographic information of the first user using the identification information,
5 the first NMD is further operable to:

provide the identification information to the information server via the network; and

wherein the information server is further operable to:

provide the demographic information of the first user to the first NMD in response to the first
NMD providing the identification information of the first user to the information server.

10 62. The system of claim 48, wherein each of the plurality of NMDs comprise access points for
communicating with computing devices of users;

wherein each of the plurality of NMDs is operable to communicate with computing devices of users and
provide offers to computing devices of users.

15 63. The system of claim 48, further comprising:
a plurality of access points coupled to the plurality of NMDs;
wherein each of the plurality of access points is operable for communicating with computing devices of
users;

20 wherein each of the subset of the plurality of NMDs is operable to provide offers through one of said
access points to computing devices of users based on the at least one offer specification and based on information
of the users.

25 64. A carrier medium comprising program instructions for providing offer specifications for offers
for products in a network system, wherein the program instructions are computer-executable to implement:
generating an offer specification, wherein the offer specification includes one or more offers of products;
specifying one or more Network Management Devices (NMDs) in the network system to receive the offer
specification; and
providing the offer specification to each of the one or more NMDs.

30 65. A carrier medium comprising program instructions for providing offer specifications for offers
for products in a network system, wherein the program instructions are computer-executable to implement:

generating an offer specification, wherein the offer specification includes one or more rules for providing
offers for products to users in accordance with information of the users;

35 specifying one or more Network Management Devices (NMDs) on the network to receive the offer
specification; and

providing the offer specification to each of the specified one or more NMDs.

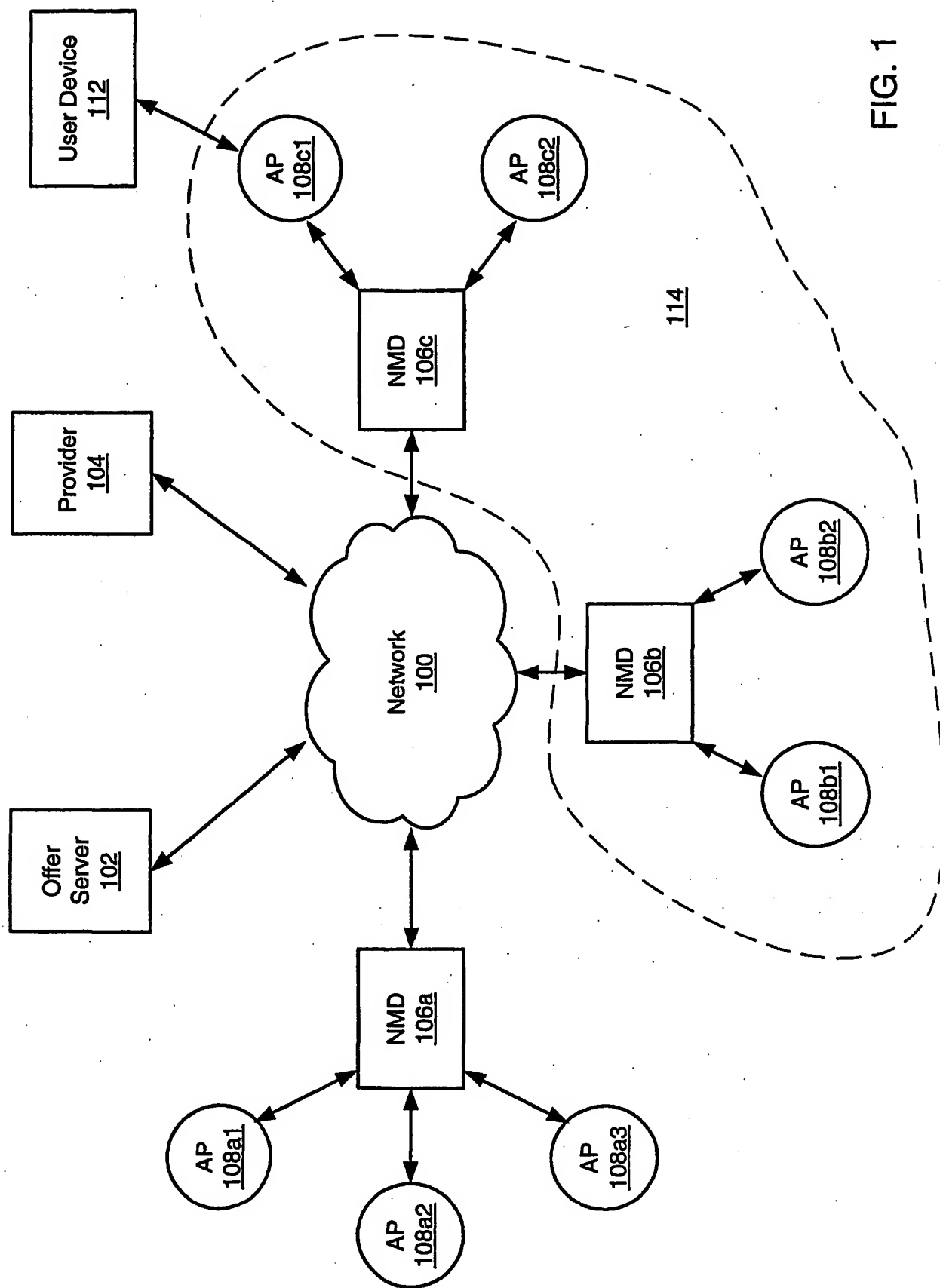


FIG. 1

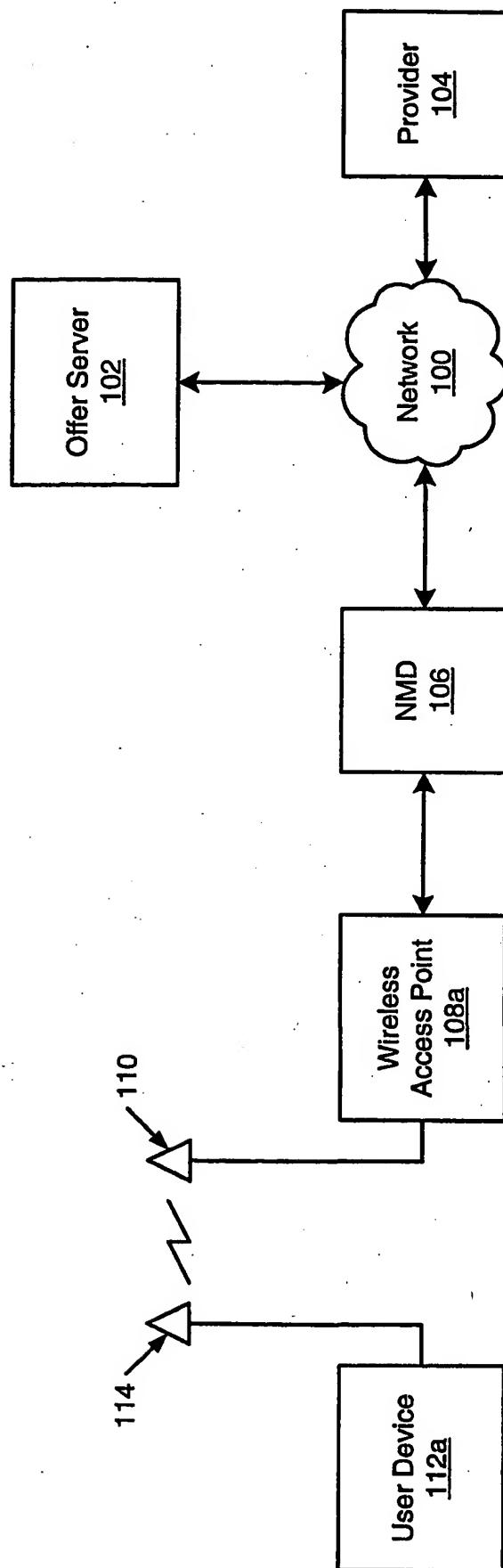


FIG. 2A

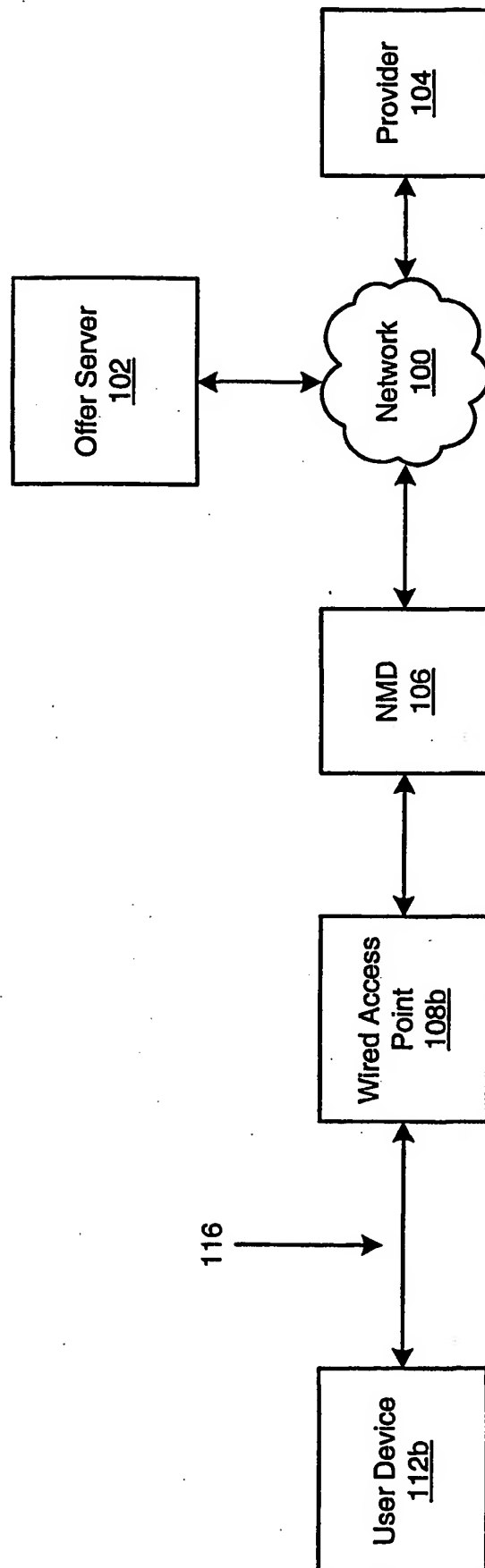


FIG. 2B

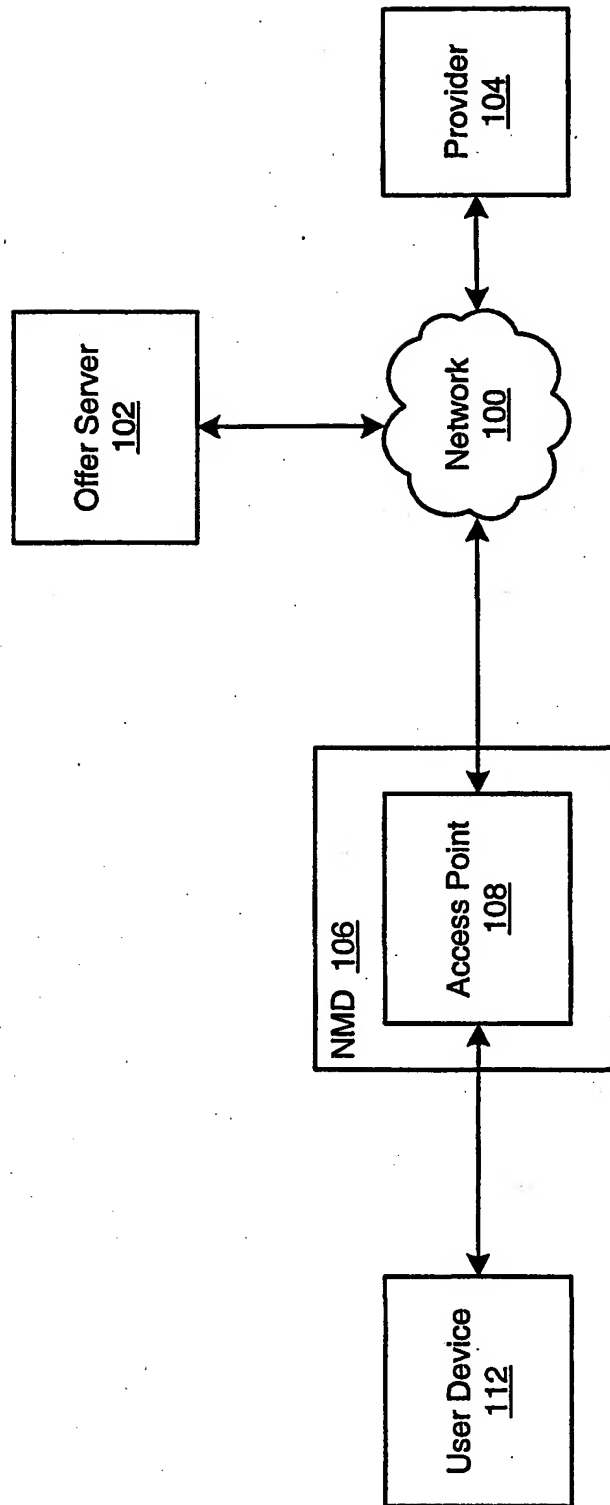


FIG. 2C

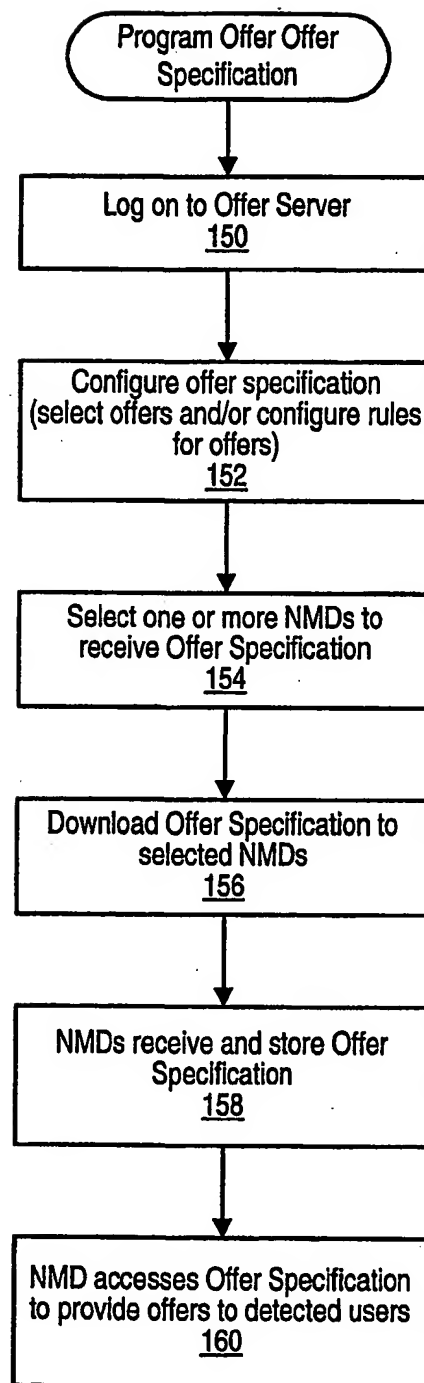


FIG. 3

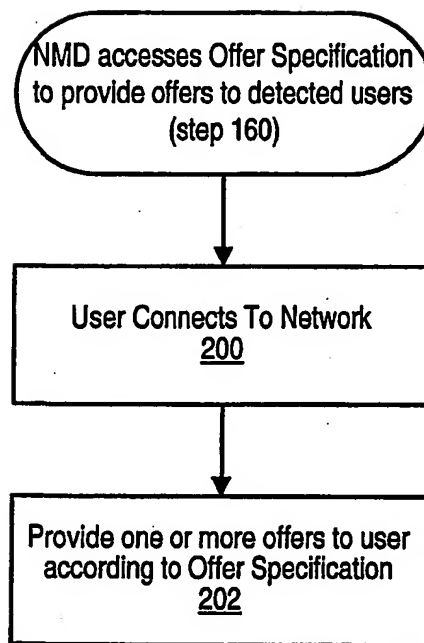


FIG. 4

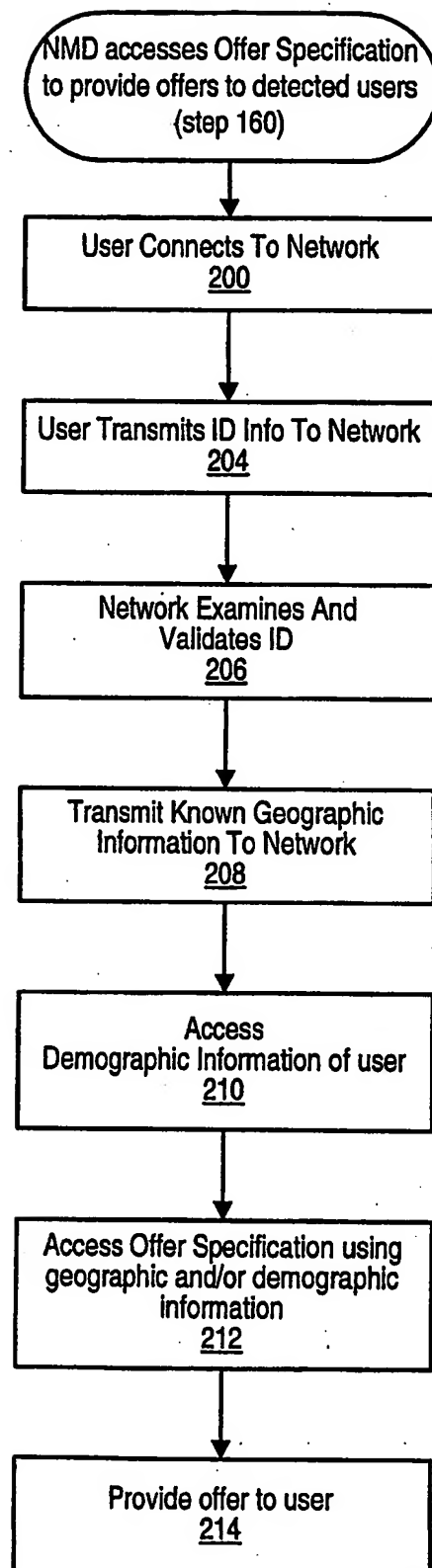


FIG. 5